# 1986 Quinquennial Review

BACKGROUND PAPER No.7 Central Area Travel Patterns

City of Toronto Planning and Development Department
Robert E. Millward, Commissioner
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# Acknowledgements

Special thanks is given to Ms. Shirlena Huang, a graduate student in the Department of Geography at the University of Toronto, who prepared a special report for the City of Toronto Planning and Development Department on the 1971 and 1981 census journey-to-work results and who shared with the City the findings of her own on-going research in this area. Also, the assistance of Professor Eric Miller of the Department of Civil Engineering at the University of Toronto is appreciated, particularly with respect to the development of a series of maps showing the changes in work trips to the Central Area over the 1971-81 period for various occupational categories. The general advice and guidance of Mr. Dave Crowley of the TTC, who has considerable experience in applying the census journey-to-work data to transit planning issues, is also gratefully acknowledged. Of course, the responsibility for the contents of this report remain solely with the City of Toronto Planning and Development Department.

# 1 Introduction

## 1.1 The Quinquennial Review: Background Papers

The 1976 amendments to the Part I Plan for the Central Area established provisions which require, among other things, a review at five-year intervals of certain aspects of the Plan, particularly those relating to the office deconcentration policies. Such a five-year review is due in 1986. As part of the research leading to the 1986 Quinquennial Review, a series of background papers covering a range of topics will be published.

This report is a part of this series and represents Background Paper No. 7 which deals with trends in travel patterns to the Central Area. Much of the analysis is based upon the journey-to-work data collected in the census of Canada for 1971 and 1981. It should be noted that census data does not provide information on travel mode. In addition, reference is also made in Appendix C to Central Area cordon count data and office floor space information.

## 1.2 Executive Summary

Although the census data only cover the period 1971-1981, the figures reveal some significant trends in the Central Area's employment structure and work travel patterns which, it can be reasonably assumed, have carried over to the present time.

### 1.2.1 Travel Patterns

Over the *1971-81* period the pattern of growth in work trips to the Central Area basically reflected the pattern of population and labour force growth in the Region:

- in Metro, increases in the labour force participation rate resulted in significant labour force growth and increased travel to the Central Area despite little population change
- in the remainder of the Region, high population growth led to a doubling of the proportion of Central Area work trips from this area (from 7% to 14% of the total)
- the Central Area's labour supply became more widely spread throughout the entire Metro Region and the average length of the work trip to the Central Area increased 23% from 10.7 km to 13.2 km over the 1971-81 period
- the beginning of the "gentrification" trend where high-income white collar workers displaced lower-income white and blue collar workers in certain preferred residential areas of the City.

*1981-86* population figures and traffic cordon count data suggest that certain of these trends have continued over recent years. It appears that the Central Area's labour supply has continued to be drawn from a widening area and that long-distance commuting will continue to increase:

- a levelling off in the labour force participation rate in Metro will result in little future trip growth from this area

- nearly all future regional population and labour force growth will occur beyond the Metro boundary

- the exceptions to this general pattern are anticipated to be found in increased trip growth from parts of Scarborough where there have been recent significant population increases and in the Central Area itself where both modest population increases and the "gentrification" process are continuing

- recent traffic forecasts predict that future increases in work trips to the Central Area will predominantly originate from beyond the Metro boundary or within the Central Area itself.

### 1.2.2 Employment Structure

The census provides information on changes (1971-81) in employment structure in terms of both the type of work (*occupation*) and the type of activity (*industry*) in which it is performed. In looking at the occupational data:

- the Central Area as a whole has become increasingly dominated by office-related jobs

- in 1981 clerical jobs remained, in absolute terms, the largest occupational category

- the greatest growth (1971-81) in employment, however, was in the Management, Administrative and Non-Scientific Professional (MANP) and Scientific Professional (SP) categories in both relative and absolute terms

- by sub-area, the Financial District had the greatest proportion of office workers and the highest share of growth in the MANP category, while the Residual Core area had a more occupationally diverse pattern of growth. The Central Area Fringe experienced the slowest overall rate of employment growth and was the one sub-area where non-office employment growth exceeded office employment gains.

Analyzing employment changes (1971-81) by industrial type for the three sub-areas reveals the following patterns:

- the Financial District became increasingly specialized in activities of a more regional nature, particularly those related to the Finance, Insurance and Real Estate (FIRE) and the Business Service sectors

- the Residual Core and Central Area Fringe experienced significant growth in the Community and Personal Services sector

- the Central Area Fringe experienced a notable decline in employment opportunities in the Manufacturing sector.

In combining these observations regarding changes in the occupational and industrial structure of the Central Area, two interesting factors come to light:

- the beginning of a trend towards an "executive" City, increasingly dominated by high-income, prestige office jobs, particularly in the Financial District.

- although the Central Area lost a considerable number of jobs in the Manufacturing sector (1971-81), the number of workers in blue collar occupations changed very little, suggesting that traditional blue collar jobs in the Manufacturing sector are being replaced by those in other sectors related to the growing service economy.

### 1.2.3 Other Findings

Census data on home-work linkages can be combined with other census information on incomes and household composition to reveal other relevant trends:

- the 1971-81 period saw little growth in average real incomes and in response, perhaps, there has been a regional trend towards multi-worker households as a means of increasing aggregate household incomes. By 1981, only 25% of all workers were in single-worker households.

- this trend towards an increasing proportion of multi-worker households means that home-work locational decisions are becoming increasingly complex and difficult to forecast.

- the 1971-81 data indicate that in two-worker households there is a tendency for white collar workers to pair with other white collar workers and, similarly, blue with blue collar workers.

- blue collar workers appear to have an inherently different residential location pattern to that of their white collar counterparts with similar incomes.

## 1.3 The Census Data

Two sets of census journey-to-work data were used in the following analysis of changes in Central Area travel patterns over the 1971-81 period. One set of data was provided by Ms. Shirlena Huang of the University of Toronto as part of a study commissioned by the City Planning and Development Department and consists of information regarding the relationship between where people who work in the Central Area live, with an indication of their *occupations* and the type of *industry* in which they were employed. Place of residence is defined by one of the approximately 600 census tracts which comprise the Toronto Census Metropolitan Area or CMA. The five occupational groups were selected on the basis of a need to distinguish between office and non-office based work trips and to differentiate between the various categories of office employment which is the major source of work trip growth in the Central Area. Consequently, four categories of office occupations were defined and one, general, non-office category. Briefly, these occupational groupings can be described as follows:

| | |
|---|---|
| **MANP** | Management, Administrative and Non-Scientific, Professional Occupations - such as financial management, judges and magistrates, securities traders. |
| **SP** | Scientific Professionals - such as chemists, physicists, economists. |
| **STS** | Supervisors, Technicians and Sales Occupations - such as government inspectors, real estate salesmen, draughtsmen. |
| **Clerical** | such as secretaries, claims adjusters, telephone operators. |
| **All Other** | basically non-office occupations. |

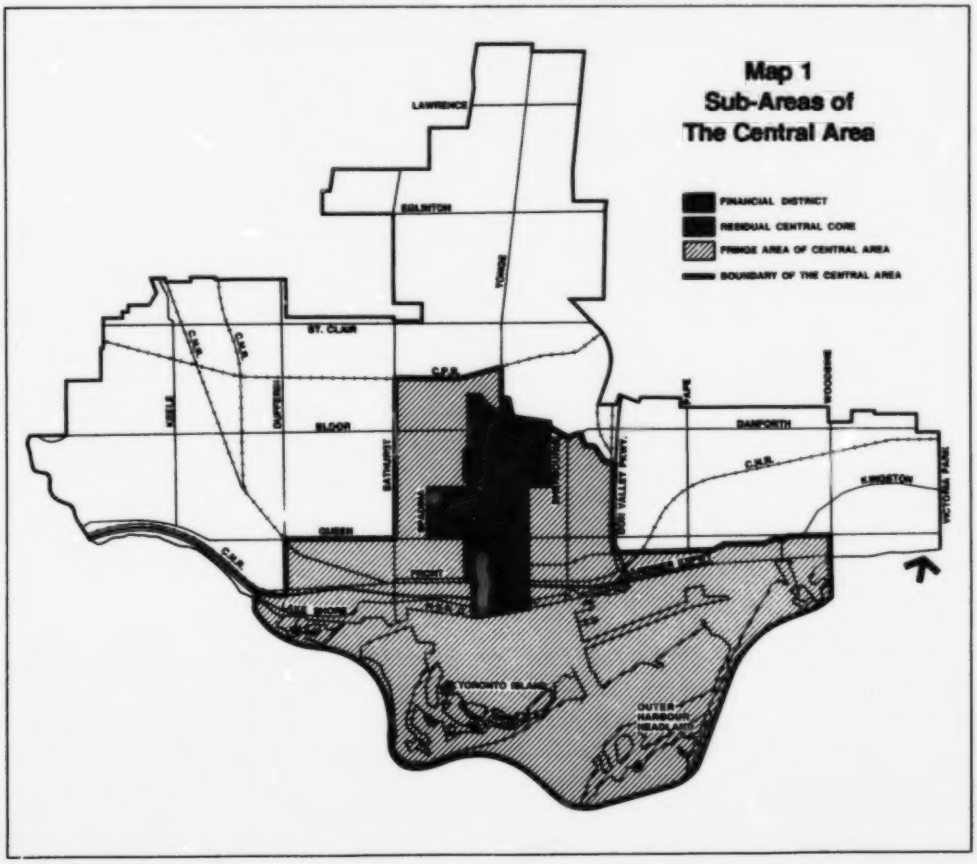
A full description of the first four categories is presented in Appendix A.

The industries in which these occupations are to be found are classified into nine categories for this analysis as follows:

1. Manufacturing
2. Transportation, Communications and Utilities (TCU)
3. Trade
4. Finance, Insurance and Real Estate (FIRE)
5. Community and Personal Services (CPS)
6. Business Services (Bus. Serv.)
7. Public Administration and Defence (PAD)
8. Basic Industries
9. Unspecified Industries

A more complete description of each of these industrial categories can be found in Appendix B.

In the analysis that follows, the Central Area is divided into the Financial District, the Residual Central Core and the Central Area Fringe. These boundaries are shown on Map 1.



The other set of census data was kindly provided by Professor E. Miller of the University of Toronto. These data cover a wider geographical area and include trips originating in the Hamilton CMA and Oshawa CA. Although the Central Area is defined as a single unit, the occupational grouping of work trips is more finely defined into nine categories as follows:

1. Self-employed professionals and high-level management
2. Employed professionals, semi-professionals and middle-management
3. Technicians
4. Supervisors and skilled clerical-sales-service
5. Foremen
6. Skilled crafts and trades
7. Semi- and unskilled clerical-sales-service
8. Semi-skilled crafts and trades, and unskilled labourers
9. Farmers and farm labourers

These occuptional groupings enable a distinction to be made between "white" and "blue" collar workers. Also, the results of Professor Miller's earlier work (see Miller et al, July, 1984) can be directly applied to these occupational groupings to provide a more detailed description of the changes in the income and household characteristics of Central Area workers over the 1971-81 period.

Finally, Appendix C of this report provides a comparison of the census journey-to-work data with other sources of information (the employment figures collected by the Metro Planning Department, traffic count data for the Central Area cordon and office floor space figures) to indicate the different methods and assumptions that relate to these data sets and the care that needs to be taken in drawing comparisons or relationships among them.

# 2 Occupational Change in the Central Area, 1971-81

Based on the set of census data using five occupational categories, Table 1 presents the changes in the numbers and types of work experienced by people employed in the Central Area over the 1971-81 period. The data in Table 1 indicate that approximately 85,000 (32 percent) more people in the Toronto CMA travelled to workplaces in the Central Area in 1981 than in 1971. The largest relative increase occurred among the MANP and SP groups, both of which more than doubled their presence in the Central Area work force over the ten-year period. Although, in 1981, clerical workers remained the single largest group of office workers employed in the Central Area, their proportion of all employment actually declined from 32.2 percent in 1971 to 30.5 percent in 1981 in spite of an absolute increase of 21,370. MANP, on the other hand, increased from 11.1 percent to 17.0 percent of all employment over the same period. With non-office work declining in importance in the Central Area, office employment as a whole, increased from 53.7 percent to 57.8 percent of all employment in the Central Area.

**Table 1**
**Employment Composition in the Central Area by Occupation**
**1971-81**

| Occupation | 1971 | | 1981 | | 1971-1981 | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| Managers and Non-scientific Professionals (MANP) | 29,661 | 11.1 | 59,930 | 17.0 | 30,269 | 102.0 |
| Scientific Professionals (SP) | 4,586 | 1.7 | 9,776 | 2.8 | 5,190 | 113.2 |
| Supervisors, Technicians, & Salespersons ( STS) | 23,161 | 8.6 | 26,318 | 7.5 | 3,157 | 13.6 |
| Clerical Workers | 86,378 | 32.2 | 107,748 | 30.5 | 21,370 | 24.7 |
| **Sub-total** | | | | | | |
| Office Workers | 143,786 | 53.7 | 203,772 | 57.8 | 59,986 | 41.7 |
| Non-Office Workers | 124,220 | 46.4 | 148,948 | 42.2 | 24,728 | 19.9 |
| **Total** | **268,006** | **100.0** | **352,720** | **100.0** | **84,714** | **31.6** |

*Source: Statistics Canada, Special Journey-to-Work Tabulations*

However, the patterns of occupational change vary among the sub-areas of the Central Area. The following section describes these patterns as they relate to the Financial District, the Residual Central Core and the Central Area Fringe.

## 2.1 Occupational Change in the Sub-Areas

Table 2 illustrates the patterns of occupational change in the three sub-areas of the Central Area between 1971 and 1981.

**Table 2**
**Employment in the Central Area and Sub-Areas by Occupation**
**1971-1981**

| | Financial District | | | | Residual Central Core | | | |
|---|---|---|---|---|---|---|---|---|
| | 1971 | 1981 | Change | % Change | 1971 | 1981 | Change | % Change |
| MANP | 15,882 | 31,493 | 15,611 | 98.3 | 10,219 | 22,638 | 12,419 | 121.5 |
| SP | 1,178 | 2,439 | 1,261 | 107.0 | 2,997 | 6,939 | 3,942 | 131.5 |
| STS | 8,439 | 8,788 | 349 | 4.1 | 10,242 | 13,377 | 3,135 | 30.6 |
| Clerical | 33,676 | 43,817 | 10,141 | 30.1 | 37,703 | 46,655 | 8,952 | 23.7 |
| Non-Office | 16,472 | 19,054 | 2,582 | 15.7 | 49,927 | 65,975 | 16,048 | 32.1 |
| **Total** | **75,647** | **105,591** | **29,944** | **39.6** | **111,088** | **155,584** | **44,496** | **40.0** |

| | Central Area Fringe | | | | Total Central Area | | | |
|---|---|---|---|---|---|---|---|---|
| | 1971 | 1981 | Change | % Change | 1971 | 1981 | Change | % Change |
| MANP | 3,560 | 5,799 | 2,239 | 62.9 | 29,661 | 59,930 | 30,269 | 102.0 |
| SP | 411 | 398 | (13) | (3.2) | 4,586 | 9,776 | 5,190 | 113.2 |
| STS | 4,480 | 4,153 | (327) | (7.3) | 23,161 | 26,318 | 3,157 | 13.6 |
| Clerical | 14,999 | 17,276 | 2,277 | 15.2 | 86,378 | 107,748 | 21,370 | 24.7 |
| Non-Office | 57,821 | 63,919 | 6,098 | 10.5 | 124,220 | 148,948 | 24,728 | 19.9 |
| **Total** | **81,271** | **91,545** | **10,274** | **12.6** | **268,006** | **352,720** | **84,714** | **31.6** |

*Source: Statistics Canada, Special Journey-to-Work Tabulations*

The Financial District has the highest proportion of office workers and became increasingly office-oriented over the 1971-81 period, with the percentage of non-office workers in the area declining from 21 to 18 percent of the total employment figure. The Financial District experienced a substantial increase in the number of managers and non-scientific professionals (MANP) and clerical workers over the 1971-81 period. In fact, just over half the increase in MANP experienced in the entire Central Area is accounted for by the growth of this occupational group in the Financial District. Between them, the MANP and clerical groups accounted for 85 percent of all employment growth in the Financial District.

The Residual Central Core experienced a similar rate of overall employment growth (40 percent) to that of the Financial District over the 1971-81 period and also became marginally more office-oriented with the percentage of non-office workers in this area decreasing from 45 to 42 percent of total employment. In absolute terms, the larger Residual Central Core experienced greater office employment increases than the Financial District (a 28,000 increase compared to 27,000 in the Financial District), even though the evidence suggests that the greatest office floor space increases over the 1971-81 period were in the Financial District.

The pattern of employment growth in the Residual Central Core was occupationally more diverse than for the other sub-areas. For example, with a less specialized occupational structure, the non-office sector of the Residual Central Core increased by over 16,000 workers during the 1971-81 period, while the comparable figure for the Financial District showed only a 2,500 increase. In the office sector, the Residual Central Core experienced significant increases in the MANP and clerical categories but, unlike the Financial District, also saw a strong increase in the Supervisors, Technicians and Sales Occupations (STS) category.

In the Central Area Fringe employment growth was much slower. In fact, only 12 percent of all Central Area employment growth over the 1971-81 period was accounted for by growth outside the Central Core. While in relative terms MANP and clerical employment growth was strong, the absolute gains contributed by these occupational groups was small. With employment in Scientific Professionals (SP) and STS actually declining between 1971-81, non-office employment growth in the Central Area Fringe actually out-stripped the growth of office employment.

In general, the data indicate that the Central Area became increasingly dominated by office work between 1971 and 1981. In particular, while employment in the Central Area increased among all occupational groups, the greatest growth in both absolute and relative terms, occurred in the MANP and SP categories. The clerical occupational group had the third highest growth rate and, in absolute terms, grew by 21,400 jobs, behind the MANP (30,300) and non-office (24,700) groups. To some extent, the increases in the MANP and SP categories may indicate the beginnings of a movement towards an "executive City", though clerical workers still remained by far the largest sector of office employment in the Central Area in 1981.

The distinctions made between the sub-area patterns of employment growth in the Central Area over the 1971-81 period can be briefly summarized as follows:

**Financial District**: Increasingly office dominated, particularly with respect to the Management and Non-Scientific Professional (MANP) and clerical categories.

**Residual Central Core**: Diverse growth pattern, including a significant growth in non-office employment.

**Central Area Fringe**: Slow growth, with most gains being made in non-office employment.

These changes are illustrated in Figures 1, 2, 3 and 4.

**Figure 1**
**Financial District Work Trips**
**by Type of Occupation**
**1971-1981**

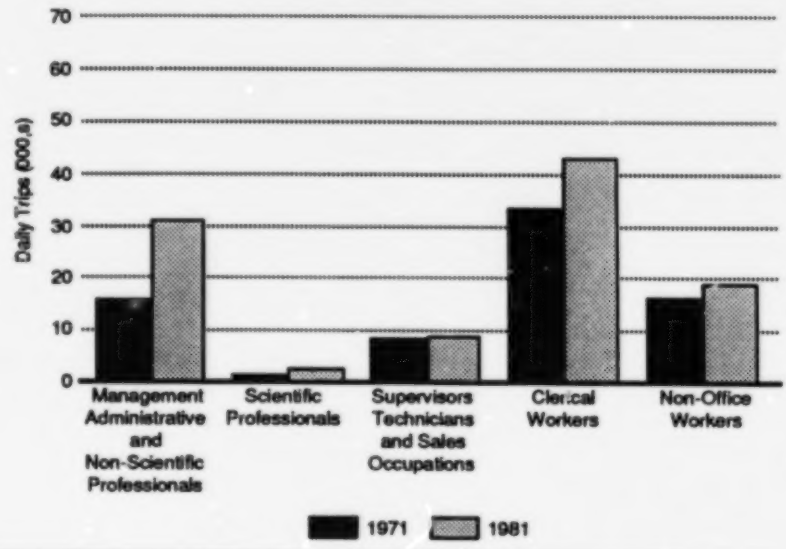



**Figure 2**
**Residual Central Core Area Work Trips**
**by Type of Occupation**
**1971-1981**

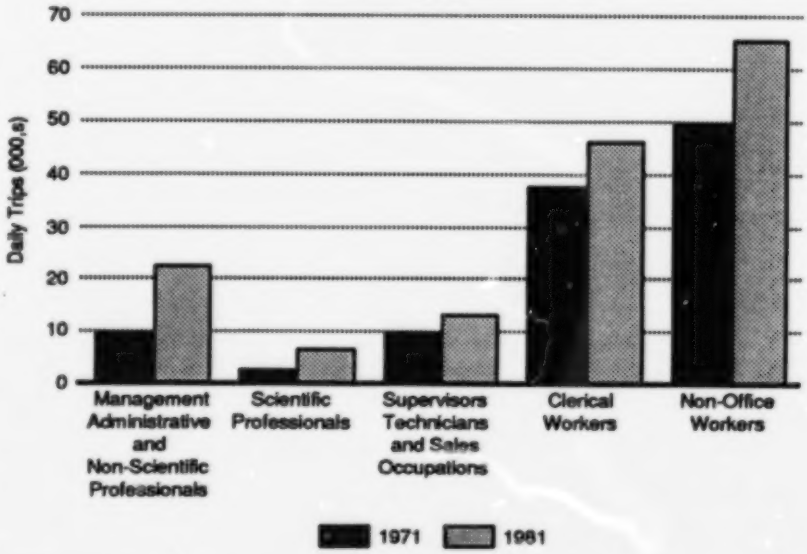


**Figure 3**
**Central Area Fringe Work Trips**
**by Type of Occupation**
**1971-1981**

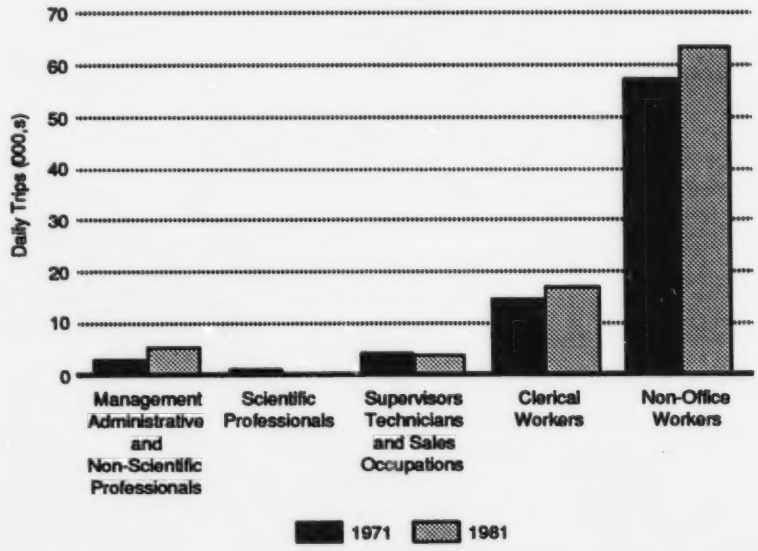
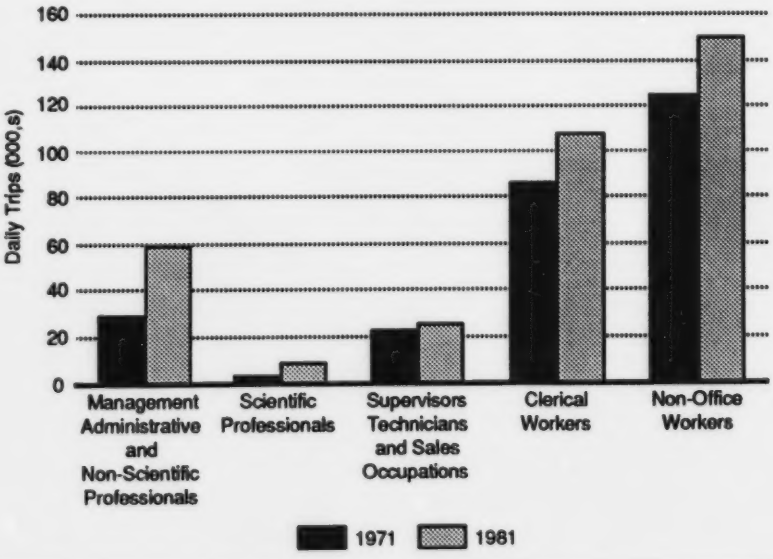



**Figure 4**
**Central Area Work Trips**
**by Type of Occupation**
**1971-1981**



# 3 Changes in Employment by Industry, 1971-81

Paralleling the changes in the types of work being carried out in the Central Area were shifts in the types of industry in which people were employed. Table 3 shows changes in employment by industry in the Central Area and its sub-areas between 1971 and 1981.

**Table 3**
**Employment in the Central Area and Sub-Areas by Industry**
**1971-1981**

| | Financial District | | | | Residual Central Core | | | |
|---|---|---|---|---|---|---|---|---|
| | 1971 | 1981 | Change | % Change | 1971 | 1981 | Change | % Change |
| Manufacturing | 4,816 | 1,260 | (3,556) | (73.8) | 4,917 | 4,286 | (613) | (12.8) |
| T/C/U | 1,503 | 2,675 | 1,172 | 78.0 | 16,847 | 22,026 | 5,179 | 30.7 |
| Trade | 6,357 | 4,344 | (2,013) | (31.7) | 19,483 | 23,578 | 4,095 | 21.0 |
| FIRE | 36,522 | 57,594 | 21,072 | 57.7 | 8,145 | 14,670 | 6,525 | 80.1 |
| CPS | 13,044 | 19,901 | 6,857 | 52.6 | 40,232 | 58,102 | 17,870 | 44.4 |
| Bus. Serv. | 11,430 | 18,925 | 7,495 | 65.6 | 3,360 | 8,375 | 5,015 | 149.3 |
| PAD | 1,595 | 826 | (769) | (48.2) | 17,776 | 24,548 | 6,772 | 38.1 |
| "Basic" | 377 | 65 | (312) | (82.8) | 331 | 0 | (331) | – |
| Unspec | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **75,644** | **105,590** | **29,946** | **39.6** | **111,091** | **155,585** | **44,494** | **40.0** |

| | Central Area Fringe | | | | Total Central Area | | | |
|---|---|---|---|---|---|---|---|---|
| | 1971 | 1981 | Change | % Change | 1971 | 1981 | Change | % Change |
| Manufacturing | 36,066 | 29,988 | (6,078) | (16.9) | 45,799 | 35,534 | (10,265) | (22.4) |
| T/C/U | 6,229 | 6,739 | 510 | 8.2 | 24,579 | 31,440 | 6,861 | 27.9 |
| Trade | 10,970 | 9,495 | (1,475) | (13.4) | 36,810 | 37,417 | 607 | 1.6 |
| FIRE | 561 | 1,045 | 484 | 86.3 | 45,228 | 73,309 | 28,081 | 62.1 |
| CPS | 25,404 | 41,766 | 16,362 | 64.4 | 78,680 | 119,769 | 41,089 | 52.2 |
| Bus. Serv. | 600 | 1,835 | 1,235 | 205.8 | 15,390 | 29,135 | 13,745 | 89.3 |
| PAD | 1,299 | 580 | (719) | (55.4) | 20,670 | 25,954 | 5,284 | 25.6 |
| "Basic" | 73 | 96 | 23 | 31.5 | 781 | 161 | (620) | (79.4) |
| Unspec. | 67 | 0 | (67) | – | 67 | 0 | (67) | – |
| **Total** | **81,269** | **91,544** | **10,275** | **12.6** | **268,004** | **352,719** | **84,714** | **31.6** |

*Source: Statistics Canada, Special Journey-to-Work Cross-tabulations*

Between 1971 and 1981, the largest absolute increase in Central Area employment occurred in the Community and Personal Services sector. This sector accounted for an additional 41,000 jobs or 48 percent of all Central Area employment growth. In relative terms the fastest growing employment sector in the Central Area was the Business Service sector which increased by 14,000 jobs or 82 percent.

The Finance, Insurance and Real Estate (FIRE) sector was the second fastest growing industrial group in both absolute and relative terms in the Central Area, adding a 62 percent increase or 28,000 jobs over the 1971-81 period.

In both the Business Service and FIRE sectors, the largest proportion of the increases in employment occurred in the Financial District where these gains accounted for virtually all employment growth in that sub-area. On the other hand, the Financial District had the smallest share (7,000) of the 41,000 increase in the Community and Personal Services sector. The remaining growth of 34,000 in this sector was divided roughly equally between the Residual Central Core and the Central Area Fringe, where in both cases it was by far the leading growth sector in absolute terms. The Residual Central Core also experienced significant growth across all sectors except Manufacturing. Absolute declines in employment in the Manufacturing sector were experienced in all three sub-areas over the 1971-81 period, with the most notable losses occurring in the Central Area Fringe (-6,000 jobs). In the Central Area Fringe these losses in Manufacturing jobs were offset by gains in the Community and Personal Services sector, with little change occurring in the other sectors.

Over the 1971-81 period, it appears that the industrial structure of the Central Area has changed to reflect an increasing specialization in the Financial District in the FIRE and Business Service employment sectors, while much of the employment growth in the Residual Central Core and Central Area Fringe took place in the Community and Personal Servicess sector. Given the more regional role of FIRE and Business Service activities it is, perhaps, natural to see their growth focussed in the Financial District, while more local services have continued to largely expand elsewhere in the Central Area.

# 4 Changes in the Geographical Pattern of Central Area Work Trips, 1971-81

The census journey-to-work data records where people live and where they work. In this way, the data provide a description of home-work linkages. In the following discussion this linkage data is somewhat loosely interpreted as representing the pattern of work trips. In fact, the census data does not provide exact information on the number of work trips made during a given day or in the peak-hour. Such values can only be inferred from the basic place-of-home and place-of-work data, as discussed in Appendix C of this report. In the meantime, it should be recognized that the phrase "work trips" is used in this limited or prescribed manner.

For the purposes of analysis, work trips into the Central Area have been divided into two basic classes of those originating in Metro and those from outside Metro, in the "Fringe". Within Metro, trips have been further classified into those originating within the Central Area itself, East Metro, North Metro and West Metro. Those trips originating within the Central Area are referred to as intra-zonal. Work trips for the Fringe Area are subdivided into those from the East, West and North Fringe. Map 2 illustrates the boundaries of these various sub-areas of Central Area work trip origins.

**Map 2**
**Sub-Areas of Central Area Work Trip Origins**

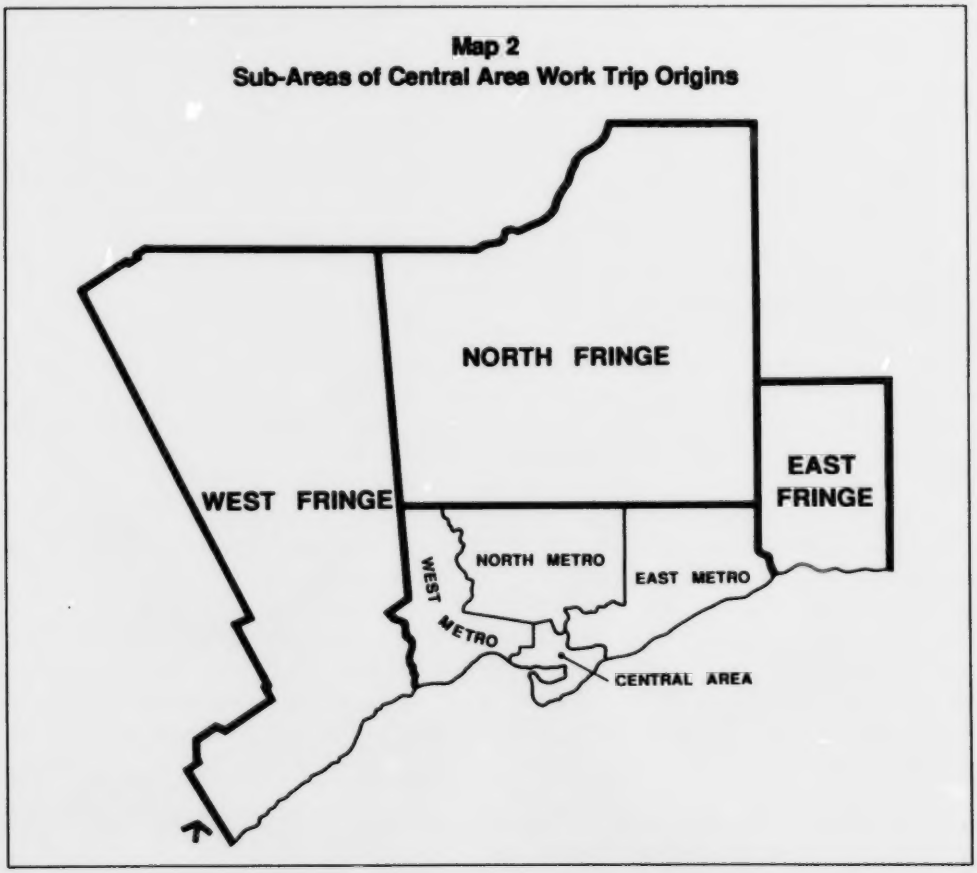


Table 4 provides aggregate figures on the volume of work trips to the Central Area from the various sub-areas for 1971 and 1981. Of the total 1971-81 increase in Central Area work trips from the Toronto CMA of 84,714, 65 percent of this gain originated within Metro and the remaining 35 percent came from outside Metro in the Fringe. Consequently, over one-third of the growth was from the Fringe and, as a result, Metro's share of total Central Area work trips fell from 93 percent to 86 percent over the 1971-81 period.

**Table 4**
**Journey-to-Work to the Central Area**
**1971 and 1981**

| Zone of Residence | 1971 | | 1981 | | 1971-1981 | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| Central Area | 29,985 | 11.2 | 35,965 | 10.2 | 5,980 | 19.9 |
| East Metro | 68,865 | 25.7 | 88,440 | 25.1 | 19,575 | 28.4 |
| North Metro | 96,420 | 36.0 | 114,540 | 32.5 | 18,120 | 18.8 |
| West Metro | 54,000 | 20.2 | 65,260 | 18.5 | 11,260 | 20.9 |
| **Metro Sub-Total** | **249,270** | **93.0** | **304,205** | **86.2** | **54,935** | **22.0** |
| East Fringe | 1,950 | 0.7 | 4,585 | 1.3 | 2,635 | 135.1 |
| North Fringe | 4,785 | 1.8 | 12,070 | 3.4 | 7,285 | 152.2 |
| West Fringe | 12,000 | 4.5 | 31,860 | 9.1 | 19,860 | 165.5 |
| **Fringe Sub-Total** | **18,736** | **7.0** | **48,515** | **13.8** | **29,780** | **160.0** |
| **Total** | **268,005** | **100.0** | **352,720** | **100.0** | **84,714** | **31.6** |

*Source: Statistics Canada, Special Journey-to-Work Tabulation*

The 84,714 increase in work trips to the Central Area represents an overall increase of 32 percent. However, the overall rate of increase from Metro was only 22 percent, while for the Fringe the comparable number was 160 percent. Obviously, in terms of the rate of growth, Central Area work trips increased much faster from the Fringe than within Metro.

Within Metro, most of the growth in Central Area work trips was from East and North Metro with the highest rate of increase from the East (28 percent). Intra-zonal work trips within the Central Area itself increased by approximately 6,000 or 20 percent over the 1971-81 period.

In the Fringe, the greatest increase in trips, in both relative and absolute terms, was from the West Fringe area where the number of work trips destined to the Central Area grew by 165 percent or approximately 20,000 trips. Although strong growth rates were also experienced in the East and North Fringe areas over the same period (1971-81), the absolute increases were much less (at 2,600 and 7,300 respectively).

To a large extent, the pattern of Central Area trip growth described above reflects the pattern of population change in the Toronto CMA over the 1971-81 period.

Table 5 provides data on this pattern of population change for the sub-areas under study.

**Table 5**
**Population in the Toronto CMA**
**1971-1981**

| | 1971 | 1981 | Change | % Change |
|---|---|---|---|---|
| Central Area | 121,230 | 112,387 | (8,843) | (7.3) |
| East Metro | 578,230 | 648,806 | 70,576 | 12.2 |
| North Metro | 864,050 | 876,019 | 11,969 | 1.4 |
| West Metro | 526,110 | 500,383 | (25,727) | (4.9) |
| East Fringe | 43,355 | 63,229 | 19,874 | 45.9 |
| North Fringe | 141,525 | 231,819 | 90,294 | 63.8 |
| West Fringe | 353,865 | 566,504 | 212,639 | 60.0 |
| **Total** | **2,628,365** | **2,999,147** | **370,782** | **14.1** |

*Source: Census of Canada*

From Table 5 it can be seen that Metro's areas of population growth during the 1971-81 period were the North and East, particularly the East, from where trip growth to the Central Area was strongest. In the Fringe, the highest population growth was in the West which was also the area of greatest trip increase.

In the case of the Central Area, it is interesting to note how there was a 6,000 increase in intra-zonal trips despite a population loss of almost 9,000 people. This reflects the fact that although the Central Area's population declined over the 1971-81 period, the employed resident labour force actually increased by just over 10,000 persons (from approximately 50,000 to 60,000). Over the 1971-81 period the Central Area's employed labour force increased as a percentage of total population from 42 percent to 54 percent. Similar increases in the labour force participation rate were experienced in Metro and the City. In the Metro case, population rose by only 50,000 over the 1971-81 period, while the employed resident labour forced increased by over 205,000. In the City of Toronto, a 1971-81 population decrease of 114,000 was accompanied by a decrease of only 7,500 in the employed labour force. Most of the increases in the labour force participation rate in the Metro area were attributable to an increasing number of women entering the work force during the 1970's, plus changes in the age structure that have increased the proportion of Metro residents in the working-age group.

An increasing labour force participation rate in the Central Area has contributed to a growth in intra-zonal work trips despite a declining population base. Also, the increase in intra-zonal work trips in the Central Area may have resulted from an increasing trend for workers living in the Central Area to work there too, since one of the principal advantages of living in this part of the City is to be close to the major downtown employment centre. Presumably, it is this type of trend that has contributed to increasing Central Area house prices and a continued strong demand for housing in this area.

On the other hand, in the entire Fringe Area (Durham, York, Peel and Halton Regions) rapid population increase has not led to such dramatic increases in the resident labour force over the 1971-81 period. In contrast to the Metro situation, a huge population increase of nearly 450,000 in the total Fringe Area resulted in a proportionately smaller increase of 355,000 in the resident labour force. Over the 1971-81 period, the Fringe Area attracted a disproportionately high number of family households, many of whose members were not in the working-age group. Table 6 illustrates the significant differences in household characteristics between the City, Metro and the CMA Fringe.

**Table 6**
**Changes in Household Structure in the Toronto CMA**

| | Family Households | | | Non-Family Household | | | Persons/ Household | |
|---|---|---|---|---|---|---|---|---|
| | 1971 | 1981 | % Change | 1971 | 1981 | % Change | 1971 | 1981 |
| City | 146,740 | 130,070 | (11.4) | 77,960 | 111,195 | 42.6 | 3.2 | 2.4 |
| Rest of Metro | 344,830 | 406,455 | 17.9 | 60,140 | 128,675 | 114.0 | 3.3 | 2.7 |
| Fringe | 208,025 | 384,245 | 84.7 | 25,700 | 61,130 | 137.9 | 3.4 | 2.9 |

*Source: Statistics Canada*

Over the 1971-81 period, Metro experienced a decline in the number of children between the ages of 0-14 years, while the Fringe experienced a significant increase in this age group. Generally, Metro's population is becoming more adult and elderly, while the Fringe will see a more balanced pattern of growth with both more young and elderly. Table 7 illustrates that over the 1971-81 period the proportion of women in the labour force has always been higher in Metro than in the Fringe, although increasing in both areas during this time.

**Table 7**
**Female Participation Rates**

| | | Age Group | | | | |
|---|---|---|---|---|---|---|
| | | 20-24 | 25-34 | 35-44 | 45-54 | 55-59 |
| Metro Region | 1971 | 71.0 | 55.1 | 53.3 | 54.5 | 48.0 |
| | 1976 | 74.3 | 61.6 | 60.4 | 57.0 | 46.5 |
| | 1981 | 78.4 | 71.2 | 70.4 | 63.4 | 49.9 |
| Metro Toronto | 1971 | 72.6 | 59.1 | 55.7 | 56.8 | 50.5 |
| | 1976 | 75.3 | 65.0 | 61.8 | 58.3 | 48.3 |
| | 1981 | 84.4 | 77.6 | 75.5 | 67.4 | 54.7 |

*Source: Metro Planning, Projections: Population, Labour Force, Households & Housing, February, 1984*

For the 1971-81 period, the net result appears to have been that increases in work trips to the Central Area were largely fuelled by changes in the composition (more workers) of a slowly growing Metro population and by the rapid population increases in the Fringe. Although the amount of population growth in the entire Fringe Area (450,000) was nearly ten times greater than that experienced by Metro (50,000), two-thirds of the 1971-81 increase in Toronto CMA work trips to the Central Area came from within Metro. However, in this period of time, the Fringe increased its share of Central Area work trips by 100 percent, increasing from 7 percent to 14 percent of the total.

Briefly speculating on the future, and in light of the 1981-86 experience, a number of significant trends appear to be emerging in relation to the geographic pattern of growth in Central Area work trips. By 1991, Metro planning staff project that increases in the Metro labour force participation rate will level off as the number of women entering the work force reaches its peak. This trend, coupled with the projections of a stable and aging Metropolitan population, is expected to produce a gradual decline in the size of the Metro labour force after 1991. The two exceptions to this general pattern of labour force decline in the Metro area are anticipated to be in the areas of north-east Scarborough and the Central Area where continued housing growth is expected to result in local population and labour force increases. On the other hand, the Fringe areas are projected to become almost exclusively the regional sources of population and labour force growth (see Background Paper No. 3, for a fuller discussion of these trends).

However, *employment* projections show considerable increases for the Metro area over the 1981-2011 period. Consequently, it is predicted that the spatial imbalance in the regional pattern of employment and labour force growth will become more pronounced.

Within Metro the growth of employment (jobs) will outstrip the projected increase in workers living in Metro. In the Fringe, on the other hand, employment growth will lag behind the growth of the resident labour force. As a result it is expected that over the 1981-2011 period there will be a significant increase in long distance commuting within the Region, particularly between the Metro and Fringe areas.

Recently, a revised set of work trip projections for the Central Area was developed by Metro/TTC staff as part of the "Network 2011" exercise to reflect the anticipated increases in the Central Area labour force resulting from new housing starts and the trend toward "professional" families in which both adults work. This results in Central Area employment growth being met primarily by expansions in either the Central Area or Fringe labour forces over the 1981-2011 period. As a consequence, the recent Metro projections of peak-hour trip growth into the Central Area over the next 25 years show major growth from the Fringe areas (22,650) and within the Central Area (14,950), with little growth (1,150) from the remainder of Metro (see Background Paper No. 8 for a fuller discussion of this topic).

# 5 Work Trip Patterns by Occupational Types, 1971-81

The previous section describes changes in the aggregate pattern of work trips to the Central Area over the 1971-81 period. This section breaks down these aggregate figures to look, in more detail, at changes in travel patterns at the occupational level and in relation to the income and household characteristics of Central Area workers. For this analysis, the set of census data provided by Professor Miller of the University of Toronto, is used. As described earlier, this set of data provides a finer breakdown of occupational types (the nine categories are described in Section 1 of this report).

The analysis that follows is primarily focused upon the interpretation of a series of three maps (see ahead to Maps 3, 4 and 5) and, consequently, is largely descriptive in nature. The maps were developed upon request by Professor Miller and cover an area which includes both the Toronto CMA and the Oshawa CA. Data are also available for the Hamilton CMA but are not shown on the maps. Before proceeding to describe the changes shown on Maps 3, 4 and 5, it is first necessary to briefly describe the occupational groupings which were developed, their income characteristics and household composition.

For the purposes of analysis, the nine occupational groups have been reduced to three principal subsets labelled A, B and C as follows:

**A: High-income White Collar**
Comprises occupational groups 1 and 2 which are self-employed and employed professionals, high- and middle-management, and semi-professionals.

**B: Lower-income White Collar**
Comprises occupational groups 4 and 7 which are Supervisors, and semi- and unskilled clerical-sales-service.

**C: Blue Collar**
Comprises occupational groups 5, 6 and 8 which are Foremen, Skilled and semi-skilled crafts and trades, and unskilled labourers.

(Group 3, Technicians, and Group 9, Farmers and Farm Labourers, were excluded from the analysis.) The income distinction made between type Type A and B white collar categories is evident from Table 8 which presents the average income of each occupational group expressed in 1981 dollars.

**Table 8**
**Average Resident Employment Income by Occupation**
**(1981 $)**

| Occupation Group | Toronto CMA | | Hamilton CMA | | Oshawa CA | | Study Area | |
|---|---|---|---|---|---|---|---|---|
| | 1971 | 1981 | 1971 | 1981 | 1971 | 1981 | 1971 | 1981 |
| 1 | $50,938 | $40,525 | $47,236 | $36,829 | $50,356 | $35,988 | $50,546 | $40,016 |
| 2 | 19,970 | 21,197 | 18,934 | 20,548 | 18,438 | 20,848 | 19,804 | 21,112 |
| 3 | 14,945 | 15,786 | 14,466 | 16,688 | 15,041 | 18,075 | 14,871 | 16,053 |
| 4 | 14,660 | 14,911 | 14,212 | 14,093 | 13,855 | 14,740 | 14,586 | 14,813 |
| 5 | 21,227 | 21,185 | 21,812 | 23,179 | 22,060 | 23,424 | 21,353 | 21,588 |
| 6 | 16,020 | 16,730 | 16,941 | 18,719 | 15,997 | 18,993 | 16,192 | 17,193 |
| 7 | 8,979 | 9,420 | 8,449 | 8,476 | 8,752 | 9,243 | 8,905 | 9,295 |
| 8 | 11,273 | 11,859 | 11,944 | 12,893 | 11,939 | 14,181 | 11,406 | 12,128 |
| 9 | 8,459 | 8,674 | 8,363 | 7,386 | 6,460 | 7,677 | 8,352 | 8,312 |
| Not Stated | 12,645 | 12,347 | 12,653 | 11,965 | 12,534 | 11,714 | 12,643 | 12,278 |
| **Total Average** | **$14,808** | **$15,726** | **$14,383** | **$15,325** | **$13,976** | **$15,673** | **$14,722** | **$15,670** |

*Source: Miller et al. (1984)*

From Table 8 it can be seen that the average incomes for the occupational groups forming the blue collar category vary considerably from the high of $21,588 (foremen) to a low of $12,128 (semi-skilled crafts and trades, and unskilled labourers). The figures also show a noticeable decline (20 percent) in the average *regional* income for the highest paid occupation group 1 over the 1971-81 period. All the remaining occupational groups only showed a very modest growth in real income over this period. The fact that there was very little real growth in incomes may partly explain the 1971-81 regional trend in the increasing number of workers per household across all occupational groups. This trend is illustrated in Table 9.

It is interesting to note from Table 9 that the decline in the percentage of one-worker households appears to be strongly related to income, with the highest income group (group 1) showing the greatest decline (16.1%) and the lowest income group (group 7) experiencing the least decline (1.7%). However, the high income groups (groups 1 and 2) continued to display the lowest number of workers in three-or-more-worker households.

This relative shift from the one-worker to the two-worker household is particularly remarkable given the concurrent trend towards increasing numbers of single parent and single person households. Overall, Table 9 suggests that the only way in which many households have increased their incomes over the 1971-81 period has been by increasing the number of workers per household.

However, it is important to note that even in 1971 only 29 percent of the regional labour force resided in one-worker households. Typically, transportation demand models assume a "classic" one-worker household and it can be seen that this was not a particularly accurate assumption even in 1971. Obviously, the locational decisions and journey-to-work patterns of multi-worker households are more complex and, consequently, more difficult for traffic forecasters to analyze and predict.

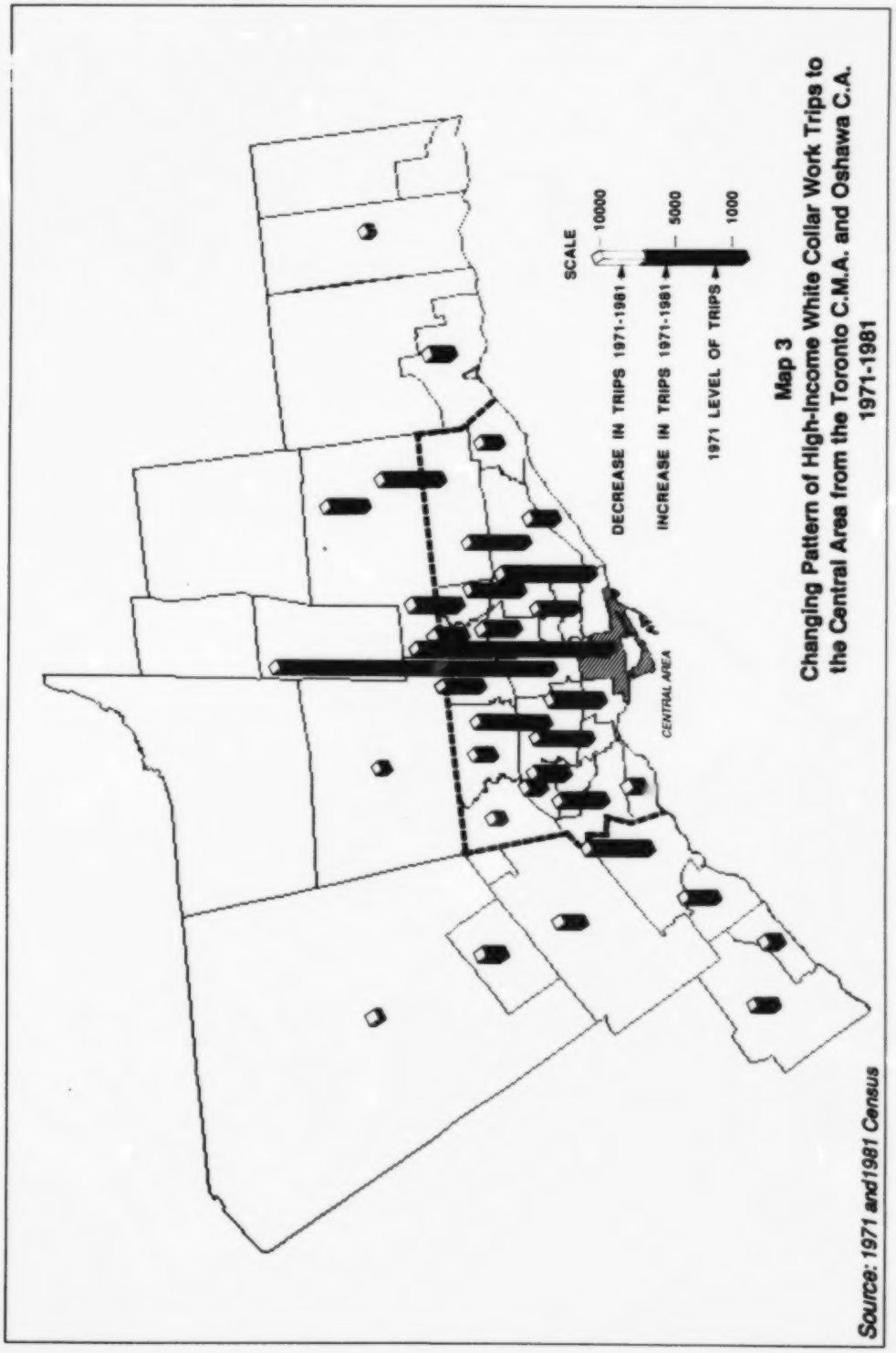
**Table 9**
**Study Area Resident Labour Force by Occupation Group and Number of Household Workers**

| Occupation Group | Resident Labour Force | | % of Occupation Group RLF in Each Household Type | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1-Worker Households | | 2-Worker Households | | 3 & More Worker Households | |
| | 1971 | 1981 | 1971 | 1981 | 1971 | 1981 | 1971 | 1981 |
| 1 | 37,830 | 82,705 | 52.6 | 36.5 | 34.2 | 45.9 | 13.2 | 17.6 |
| 2 | 190,250 | 325,755 | 38.2 | 32.3 | 45.0 | 49.2 | 16.8 | 18.5 |
| 3 | 23,650 | 36,485 | 31.0 | 27.1 | 48.3 | 48.9 | 20.7 | 24.0 |
| 4 | 246,365 | 362,860 | 30.0 | 24.9 | 49.0 | 51.3 | 21.0 | 23.8 |
| 5 | 46,500 | 56,965 | 39.7 | 28.4 | 39.3 | 44.7 | 21.0 | 26.9 |
| 6 | 151,750 | 184,085 | 35.6 | 28.0 | 42.7 | 47.2 | 21.7 | 24.8 |
| 7 | 282,685 | 399,085 | 20.8 | 19.1 | 45.4 | 42.8 | 33.8 | 38.1 |
| 8 | 306,960 | 405,395 | 22.2 | 18.6 | 33.1 | 34.7 | 44.7 | 46.7 |
| **Total** | **1,285,990** | **1,853,335** | **29.0** | **24.6** | **42.3** | **44.5** | **28.7** | **30.9** |

*Source: Miller et al. (1984)*

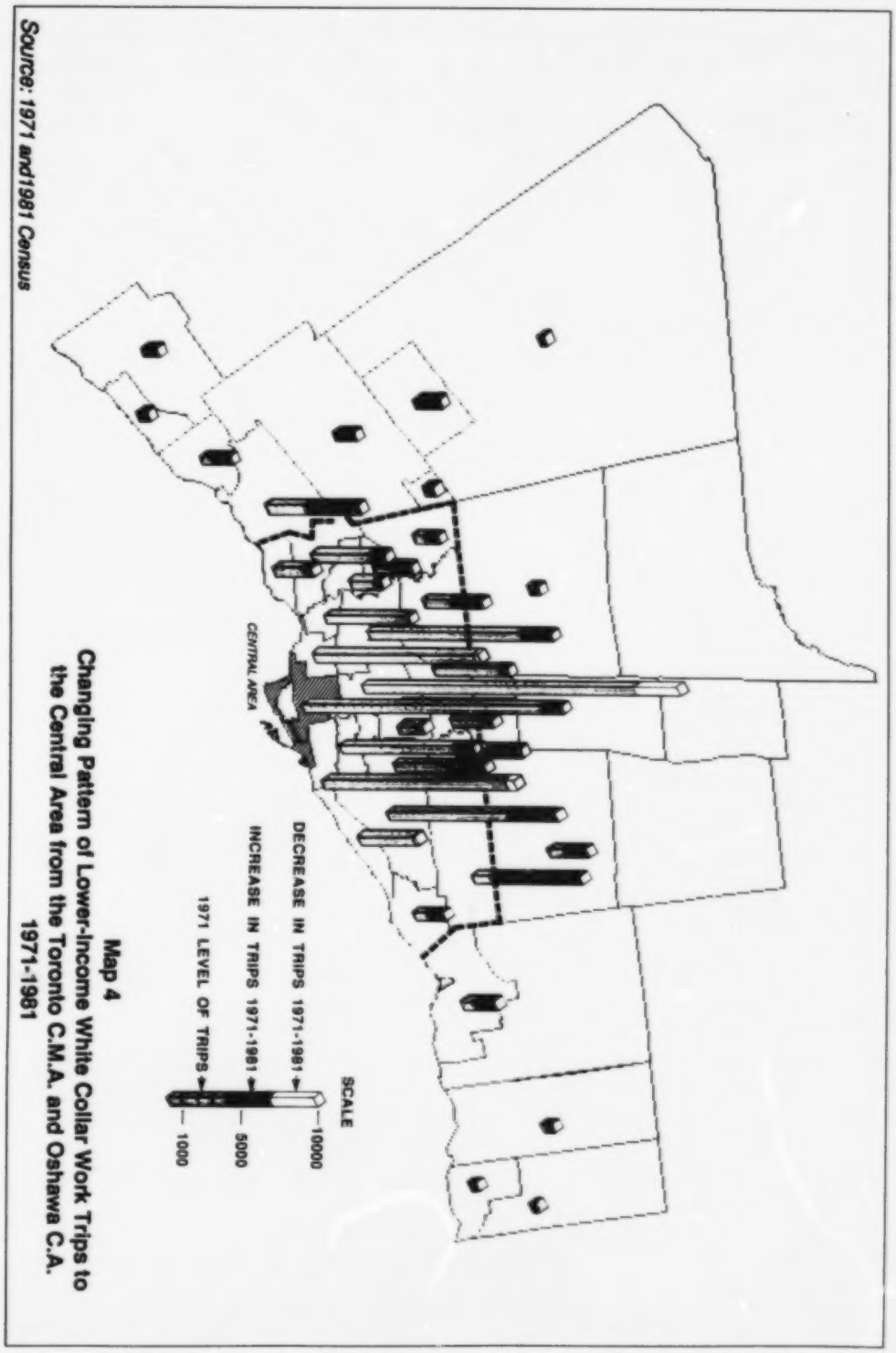
Tables 8 and 9 refer to average changes at the regional scale. The following discussion looks at changes in the journey-to-work pattern of the Central Area in particular. Tables 10 and 11 show the changes in work trips to the Central Area from the Toronto CMA and Oshawa CA over the 1971-81 period for each of the nine occupational categories and each of the three employment sub-sets respectively. The changes for the employment sub-sets are presented descriptively in Maps 3, 4 and 5.

Map 3, for example, shows the number of High-income White Collar (Type A) workers who live in each of the 42 zones in the study area and who work in the Central Area (or Zone 13). The lighter coloured portion of each zone's bar indicates the number of High-income While Collar workers who were resident in the zone in 1971 and worked in the Central Area. The darker shaded upper portion of each zone's bar indicates the net growth between 1971 and 1981 in the number of Type A workers who lived in the zone and worked in the Central Area. Where a net decrease in such trips occurred over the 1971-81 period, the upper portion of the particular zone's bar is left white to indicate the loss in Central Area bound trips from the original 1971 level.



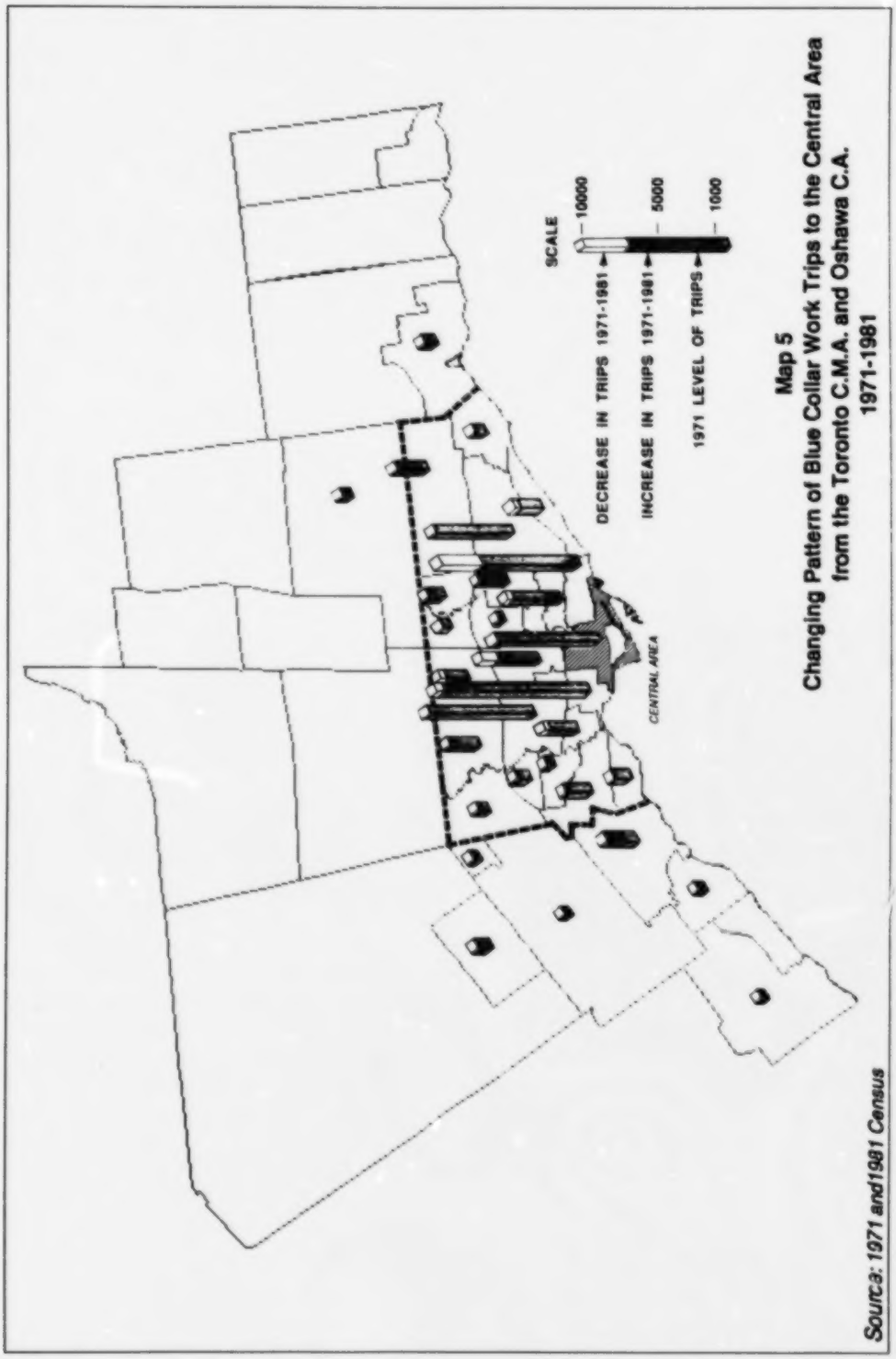

**Map 3**
**Changing Pattern of High-Income White Collar Work Trips to the Central Area from the Toronto C.M.A. and Oshawa C.A. 1971-1981**

*Source: 1971 and 1981 Census*




**Map 4**
**Changing Pattern of Lower-Income White Collar Work Trips to the Central Area from the Toronto C.M.A. and Oshawa C.A. 1971-1981**

*Source: 1971 and1981 Census*




**Map 5**
**Changing Pattern of Blue Collar Work Trips to the Central Area from the Toronto C.M.A. and Oshawa C.A. 1971-1981**

*Source: 1971 and1981 Census*

**Table 10**
**Changes in Work Trips to the Central Area from The Toronto CMA and Oshawa CA by Occupation 1971-81**

| Occupation | 1971 Central Area Work Trips | % Share of 1971 Total | 1981 Central Area Work Trips | % Share of 1981 Total | 1971-81 Change in Trips |
|---|---|---|---|---|---|
| Self-Employed Professionals & High-Management | 12,720 | 4.60 | 25,450 | 7.10 | 12,730 |
| Employed Professionals,, Semi-Professionals & Middle Management | 49,110 | 17.90 | 82,840 | 23.00 | 33,730 |
| Technicians | 5,190 | 1.90 | 5,420 | 1.50 | 230 |
| Supervisors & Skilled Clerical/ Sales/Service Workers | 65,280 | 23.90 | 90,510 | 25.10 | 25,230 |
| Foremen | 5,865 | 2.10 | 4,945 | 1.40 | (920) |
| Skilled Crafts & Trades | 19,650 | 7.10 | 18,805 | 5.20 | (845) |
| Semi- & Unskilled Clerical/ Sales/Service Workers | 70,215 | 25.70 | 83,825 | 23.20 | 13,610 |
| Semi-Skilled Crafts & Trades & Unskilled Labourers | 43,145 | 15.70 | 46,375 | 12.90 | 3,230 |
| Farmers & Farm Labourers | 495 | 0.02 | 600 | 0.02 | 105 |
| Occupation Not Stated | 2,985 | 1.08 | 2,075 | 0.58 | (910) |
| **Total Work Trips** | **274,655** | **100.0** | **360,845** | **100.0** | **86,190** |

*Source: 1971 and 1981 Census*

**Table 11**

**Changes in Work Trips to the Central Area From the Toronto CMA & Oshawa CA, 1971-81 For Three Major Employment Sub-sets**

| | 1971 Central Area Work Trips | % Share of 1971 Total | 1981 Central Area Work Trips | % Share of 1981 Total | 1971-81 Change in Trips |
|---|---|---|---|---|---|
| A. High-Income White Collar | 61,830 | 22.5 | 108,290 | 30.1 | 46,460 |
| B. Lower-Income White Collar | 135,495 | 49.6 | 174,335 | 48.3 | 38,840 |
| C. Blue Collar | 68,660 | 24.9 | 70,125 | 19.5 | 1,465 |
| Other | 8,670 | 3.0 | 8,095 | 2.1 | (575) |
| **Total** | **274,655** | **100.0** | **360,845** | **100.0** | **86,190** |

*Source: Prof. E. Miller, based on 1971 and 1981 Census.*

In looking at the patterns presented in Maps 3, 4 and 5, the following general conclusions can be drawn regarding changes in travel patterns to the Central Area by occupations type over the 1971-81 period.

Type A: High-income White Collar - in 1971, the central zones along the Yonge Street-Don Valley corridor, all the way from Downtown to north of Highway 401, represented the dominant area of trip origins for this class of Central Area worker. North Metro was the major residential location for these high income office workers. Beyond this central corridor the 1971 pattern of trips was fairly uniformly distributed throughout the remaining residential areas of Metro (except those close to industry), with a relatively small number of trips also coming into the Central Area from beyond the Metro boundary. Over the 1971-81 period three basic trends appear to have emerged for Type A trips:

1. the reinforcement of the pattern of trips from the primary area of the central corridor, including the Central Area itself (particularly in the Cabbagetown area) where the effects of the "gentrification" process were beginning to be felt.

2. the extension of the "gentrification" process to the west and east ends of the inner City, particularly the latter in the Riverdale and Beach areas.

3. significant increases in trips from the Fringe Area (particularly from Mississauga and Brampton in the west) and from the distant area of north-east Scarborough in Metro.

Apart from these three pronounced areas of growth, there was generally only a modest increase in high-income white collar work trips to the Central Area from elsewhere in the Metro C.M.A. (as can be seen from Map 3).

**Type B**: Lower-income White Collar - in 1971 this class of Central Area worker had a broadly similar residential location pattern to that of the high-income (Type A) group, except that the dominance of the central corridor was less pronounced, resulting in a somewhat flatter distribution of residential locations for this group throughout the general area of Metropolitan Toronto. As was the case for the high-income group, a relatively small proportion of the Type B group lived in the Fringe Area in 1971. Over the 1971-81 period, however, the residential growth pattern of the lower income group displayed some noticeable differences to that of its high-income counterpart. As Map 4 illustrates, there were fewer Type B workers living in North Toronto in 1981 than ten years before and the growth of this group in the Central Area, though positive, had not been as strong as that of the higher income (Type A) group. Consequently, the central corridor became a less dominant residential location for Lower-income White Collar workers by 1981 as competition for this apparently preferred residential area seems to have forced an increasing proportion of these lower-income workers to seek more affordable homes elsewhere. Also, reflecting the competition of the "gentrification" process, perhaps, the Type B group also shows losses in the east and west ends of the City of Toronto over the 1971-81 period in contrast to the gains in these areas made by the High-income White Collar group. As a consequence of these trends, the 1981 residential distribution pattern of Type B workers appears to have become even more flattened and to have spread farther out throughout the entire Metro Region, with significant growth in the Fringe Area, particularly from the west and from north-east Scarborough in Metro. In fact, the suburban pattern of residential growth is similar to that of the Type A, high-income group and, perhaps, reflects the availability of a greater range of housing types in the expanding suburban areas than in the existing stock of houses in the City and North Toronto (i.e., largely the central corridor) where few new homes were being built over the 1971-81 period. These trends result, overall, in an increase in the average length of the work trip for Group B workers in the Central Area.

**Type C**: Blue Collar - Map 5 illustrates that even in 1971 the residential pattern of blue collar workers with jobs in the Central Area was quite different from that of either the Type A or Type B white collar workers, even though the average incomes of many of the blue collar workers were comparable to those of the lower-income white collar group. The preference for the central (Yonge Street-Don Valley) corridor as a residential location is not evident for the blue collar group. These workers show a strong propensity to reside in an area that has become termed the "industrial U" (see Miller et al.) which runs from Rexdale in the northwestern corner of Metro Toronto, down along the Railway lines through the Junction Triangle area, along the Central Waterfront, through the east end of the City of Toronto and out into west-central Scarborough. It should be noted that as recently as 1981 there was little attractive residential development in the Central Waterfront area. The industrial U basically represents the traditional industrial areas of Toronto and it was here that, in 1971, most blue collar workers with jobs in the Central Area lived, while relatively few white collar workers, including those in the lower-income occupations, chose homes in this general area. In 1971, the Group C workers showed relatively little dispersion beyond the industrial U and, consequently, most blue collar workers with jobs in the Central Area lived within this quite well defined area of Metro Toronto.

However, over the 1971-81 period there were some changes to the Group C residential location pattern. Generally, Group C workers with jobs in the Central Area experienced little net growth overall and there was a general shift towards a more dispersed residential pattern. This dispersal is reflected in a decrease in the number of blue collar workers with jobs in the Central Area who live in the City of Toronto, particularly in the east end where the "gentrification" process appears to have displaced many of these workers. Although there was an increase in the proportion of Central Area

blue collar workers living in the Fringe Area, this trend was not as pronounced or significant in absolute terms as was the case for white collar workers (Types A and B). It appears safe to conclude, and with little surprise, that the expansion of the GO transit system to service work trips from the expanding residential areas of the Fringe to the growing job market of the Central Area has been primarily to the benefit of white collar workers.

In comparing the occupational data (see Table 10) with data on industrial structure (see Table 3), it can be inferred that, over the 1971-81 period, Central Area workers employed in blue collar occupations have increasingly found such jobs in other than the traditional Manufacturing sector (see Table 3). Over the 1971-81 period there was actually a marginal increase (1,465) in blue collar jobs (occupational categories 5, 6 and 8) in the Central Area despite a loss of 10,265 jobs in the Manufacturing sector. From these numbers, it appears that Central Area blue collar jobs have become increasingly associated with growth in the Service sector and, perhaps, the traditional view of linking the fate of blue collar jobs in the Central Area solely to the fortunes of the Manufacturing sector should undergo some revision as a result.

In looking at the overall picture provided by Maps 3, 4 and 5, it can be seen that over the 1971-81 period the Central Area's labour supply become increasingly spread throughout the Metro Region. In fact, it has been estimated that the average length of all work trips to the Central Area increased by 23% from 10.7 km in 1971 to 13.2 km in 1981 (Metro Planning Dept., Nov. 1984). Although there was only a relatively modest increase in the number of work trips originating from within the Central Area itself, there appears to have been some significant changes in the occupational mix of trips originating in this area, with a general tendency for High-income White Collar workers to have increased their presence at the expense of the lower-income groups through the "gentrification" process referred to above. The growth in Central Area work trips from the Fringe has been mainly in the white collar groups. It is interesting to note that the Lower-income White Collar workers have a quite different residential location pattern to that of Blue Collar workers with similar incomes, and there are also some more subtle differences between the High- and Lower-income White Collar groups. This suggests that, although income may be an important variable in explaining *within* group differences between similar classes of workers (e.g., white collar), occupational type appears to be more important in explaining differences *between* groups of similar income belonging to different classes (e.g., white collar, lower-income versus blue collar). Blue collar workers appear to have an inherently different residential location pattern to that of their white collar counterparts. Consequently, occupation appears to be a key variable around which to organize the analysis of journey-to-work patterns.

However, it is recognized that the residential location decision is, for each household, the outcome of a complex process and the brief, descriptive analysis presented here only hints at what is involved in developing a full understanding of the place of residence - place of work link for the Central Area. For example, reference has already been made to the problems of analyzing two or more worker households. For such households the situation can arise in which a particular working member of the household appears resident in an area that is not typical of that person's occupation and income, and whose residential location decision has really to be explained at the more complex, aggregate household level. In an analysis of two-worker households Miller found that "... white collar workers tend to be paired with white collar workers and blue collar workers tend to be paired with blue collar workers" and frequently the white collar pairings involve a match of high and relatively low income workers (see Miller et al., p.52 and Table 3.4).

# 6 Conclusions

Although the census figures analyzed in this report only cover the period from 1971 to 1981, they yield valuable insights regarding the changing pattern of Central Area employment and work trips over this period and enable the identification of certain trends which appear to be continuing into the present time.

Over the 1971-81 period, the pattern of growth in Central Area work trips strongly reflected the pattern of labour force growth in the surrounding Metropolitan and Fringe areas. In the 1970's, the Metropolitan area experienced considerable labour force growth despite little change in population, while the Fringe Area experienced both strong population and labour force growth. In the future, as the growth in the labour force participation rate in Metro levels off, it is expected that Central Area employment growth will become increasingly dependent upon the growing labour force of the Fringe Area where population and labour force growth are projected to remain strong. In Metro, only parts of Scarborough and the Central Area itself are expected to experience significant increases in the resident labour force. Table 12 and Figure 5 illustrate the pattern of population change, by municipality, for the Toronto CMA over the 1981-6 period.

**Table 12**
**Population Change, by Municipality, in the Toronto CMA**
**1981-1986**

| Location | 1981 Popn. | as % CMA | 1986 Popn. | as % CMA | Chg. 1981-86 | % Chg. 1981-86 | % of CMA Change | Annual Growth |
|---|---|---|---|---|---|---|---|---|
| East York | 101,974 | 3.40 | 100,622 | 3.08 | (1,352) | (1.33) | (0.50) | (270) |
| Etobicoke | 298,713 | 9.96 | 301,666 | 9.23 | 2,953 | 0.99 | 1.09 | 591 |
| North York | 559,521 | 18.66 | 553,733 | 16.94 | (5,788) | (1.03) | (2.14) | (1,158) |
| Scarborough | 443,353 | 14.78 | 482,793 | 14.77 | 39,440 | 8.90 | 14.61 | 7,888 |
| Toronto | 599,217 | 19.98 | 607,384 | 18.58 | 8,167 | 1.36 | 3.03 | 1,633 |
| York, City of | 134,617 | 4.49 | 134,655 | 4.12 | 38 | 0.03 | 0.01 | 8 |
| Brampton | 149,030 | 4.97 | 187,681 | 5.74 | 38,651 | 25.94 | 14.32 | 7,730 |
| Mississauga | 315,056 | 10.51 | 372,359 | 11.39 | 57,303 | 18.19 | 21.23 | 11,461 |
| Aurora | 16,267 | 0.54 | 20,814 | 0.64 | 4,547 | 27.95 | 1.68 | 909 |
| Markham | 77,037 | 2.57 | 114,111 | 3.49 | 37,074 | 48.12 | 13.74 | 7,415 |
| Richmond Hill | 37,778 | 1.26 | 46,561 | 1.42 | 8,783 | 23.25 | 3.25 | 1,757 |
| Vaughan | 29,674 | 0.99 | 64,736 | 1.98 | 35,062 | 118.16 | 12.99 | 7,012 |
| Oakville | 75,773 | 2.53 | 86,695 | 2.65 | 10,922 | 14.41 | 4.05 | 2,184 |
| Ajax | 25,475 | 0.85 | 36,412 | 1.11 | 10,937 | 42.93 | 4.05 | 2,187 |
| Pickering | 37,754 | 1.26 | 48,782 | 1.49 | 11,028 | 29.21 | 4.09 | 2,206 |
| Rest of Fringe | 97,718 | 3.26 | 109,868 | 3.36 | 12,150 | 12.43 | 4.50 | 2,430 |
| **Toronto CMA** | **2,998,957** | **100.00** | **3,268,872** | **100.00** | **269,915** | **9.00** | **100.00** | **53,983** |

*Note: Figures for 1986 are based on interim population counts. Since all stages of census processing have not been completed, these counts are not final and are subject to minor revision. The final official Census counts are expected to become available in April 1987.*

**Figure 5**
**Population Change by Municipality**
**Toronto CMA**
**1981-1986**

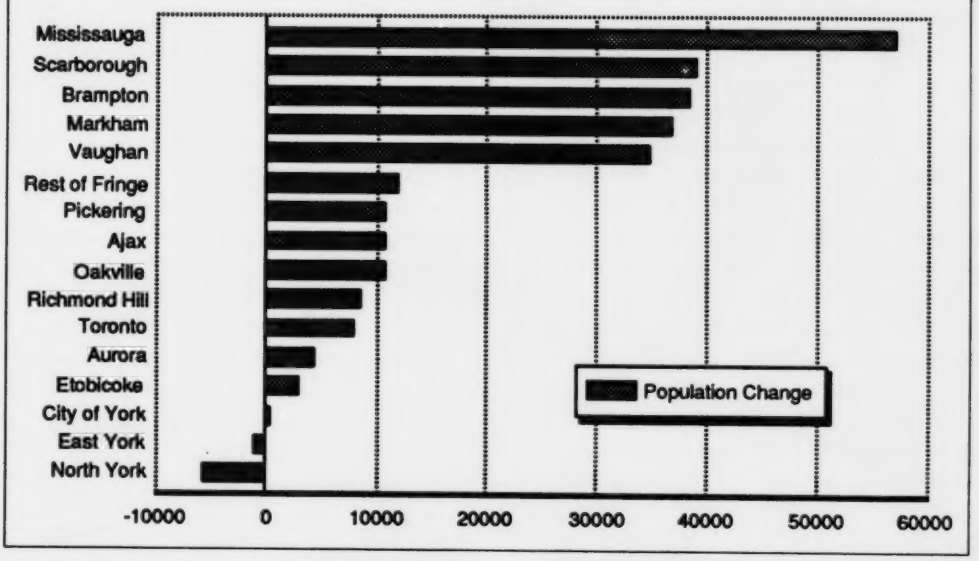



Table 12 and Figure 5 indicate that most population growth (1981-6) has been beyond the Metro boundary in the municipalities of Mississauga, Brampton, Markham and Vaughan. The only area of significant population growth in Metro over the 1981-6 period is Scarborough. The municipalities of North York and East York actually experienced population decline over this period. The 1981-6 pattern of population growth can be expected to have reinforced the 1971-81 trends towards an increase in long-distance commuting to the Central Area. The 1981-6 figures also suggest there will be a significant increase in commuting from the North Fringe, in the rapidly expanding municipalities of Markham and Vaughan, that may balance the growth in Central Area work trips from the traditionally predominant West Fringe (Mississauga and Brampton).

The 1971 and 1981 census data reveal the beginning of the residential "gentrification" process in parts of the City. Over this period, high-income white collar workers have displaced lower-income white and blue collar workers in certain preferred residential locations. The displacement of lower income white collar workers in North Toronto, Cabbagetown, Riverdale and parts of the City's west end was particularly noticeable. In the Beach area a loss of lower-income white collar workers was also accompanied by a significant reduction of Central Area blue collar workers living in this area over the 1971-81 period.

Current evidence suggests that these trends have continued over the 1981-6 period. House prices in these areas of the City, for example, have continued to increase at above average levels reflecting their preferred status for an increasing number of high-income white collar workers. Also, much of the new housing that has been built in the Central Area has been aimed at the two-worker "professional" household.

The continued modest population growth of the Central Area and the increasing proportion of working adults housed in the area are thought to be off-setting factors in the overall trend towards an increase in long-distance commuting to the Central Area. Recent trip projections produced by the Metropolitan Toronto Planning Department indicate that future increases in work trips to the Central Area are expected to predominantly originate from beyond the Metro boundary or within the Central Area itself.

The census data on the changes in employment by occupational and industrial categories reveal that, over the 1971-81 period, the Central Area has become increasingly dominated by office-related jobs. In 1981, clerical workers remained the largest employment group in absolute terms despite significant changes in occupational structure over the previous ten years. However, in terms of growth, the fastest expanding occupational groups, in both relative and absolute terms, were the Management, Administrative, Non-Scientific and Scientific Professional categories. The rapid growth of these occupations over the 1971-81 period may represent the beginnings of a trend towards an "executive" downtown, increasingly dominated by high-income, prestige office jobs. The possible implications of such changes in the occupational mix of the Central Area work force on future commuting patterns are discussed in Background Paper No. 2 and Section 7.1 of Background Paper No. 8.

Within the Central Area, employment opportunities in the Financial District have become increasingly specialized over the 1971-81 period in the more regional functions associated with the Finance, Insurance and Real Estate (FIRE) and Business Service sectors. Employment growth in the Residual Core area has been more occupationally diverse and both this area and the Central Area Fringe experienced particularly strong employment growth in the more local functions associated with the Community and Personal Services (CPS) sector. The Central Area Fringe experienced the slowest rate of employment growth and was the one part of the Central Area where the increase in non-office jobs was greater than the increase in office jobs over the 1971-81 period. For the ten-year period, the figures indicate that, overall, employment growth in the Central Area was largely contained within the Central Core (i.e. the Financial District plus the Residual Core).

In interpreting the census figures it must be borne in mind that even in cases where the aggregate figures appear relatively stable over the 1971-81 period, there may have been considerable change at the individual level. For example, the occupational data show that there was little change in the total number of blue collar workers in the Central Area over the ten year period. However, the data by industrial groupings, show a considerable loss of jobs in the Manufacturing sector in the Central Area over the same period. This suggests that, at the individual level, there may have been significant changes in the composition of the Central Area's blue collar work force even though the total numbers show little change. Many blue collar workers may have left the Central Area along with the departing jobs in the traditional Manufacturing sector to be replaced by others in new blue collar job positions.

The census data also indicate that over the 1971-81 period an increasing number of workers lived in multi-worker households. By 1981, only 25% of the region's workers lived in one-worker households. This is, perhaps, explained by the fact that there was little real growth in average regional incomes over the 1971-81 period and the only way in which many households were able to improve their economic position was by increasing the number of workers per household. The locational decisions and journey-to-work patterns of multi-worker households are more difficult to analyze and predict than those of the "classic" one-worker household typically assumed in

transportation modelling exercises. Other studies have shown that there is a strong tendency for two-worker households to produce white-white and blue-blue collar pairings of workers and frequently white collar pairings involve a combination of high and relatively low income workers (see Miller et al, July 1984).

Finally, Appendix C of this report provides a comparison of the census journey-to-work data with other information sources, particularly the employment estimates provided by the Metro Planning Department, the Central Area traffic cordon count data, and Central Area office floor space figures. Such comparisons bring to light the different methods of data collection and assumptions that relate to these various information sets and the qualifications or cautions that apply to their intepretation.

## Sources

Crowley, D. "Commuting To The Central Area - Changes Between 1971 and 1981 And Implications For The Future" a working paper prepared by the TTC Social Trends/Spatial Patterns Task Force, Toronto, August, 1985

Crowley, D., Miller E. J. van Loon J. and M. Cromie **Census Place-of-Work: Manual For Transportation Planners** draft paper, Toronto, September, 1986 (unpublished)

Huang, S. **An Analysis of Toronto's Central Area: Occupational And Industrial Structure and Journey-To-Work Flows, 1971-81**, a report prepared for the City of Toronto Planning and Development Department, Toronto, November, 1986.

Hutchinson, B. G. **The Journey to Work In The Greater Toronto Area 1971-81**, Department of Civil Engineering, University of Waterloo, March, 1984.

Metropolitan Toronto Planning Department **1981 Journey-To-Work Travel Patterns**, Toronto, November, 1984

Miller, E. J. Steuart, G. N., Ross, D. A., Potvin R. and R. Ridout **An Occupationally Disaggregate Analysis of Census Data For The Greater Toronto Area, 1971-81**, University of Toronto/York University Joint Program in Transportation, Toronto, July, 1984

City of Toronto Department of Public Works **Cordon Report 1970 to 1981**, Toronto, March, 1982

City of Toronto Planning Board **Core Area Task Force Technical Appendix**, Toronto, September, 1974

# Appendix A

## Occupation Groups

### Group 1: Management, Administrative and Non-scientific Professional Occupations

1111 Members of Legislative Bodies
1113 Government Administrators
1119 Officials and Administrators Unique to Government, n.e.c.
1130 General Managers and Other Senior Officials
1131 Management Occupations, Natural Sciences and Engineering
1132 Management Occupations, Social Sciences and Related
1133 Administrators in Teaching and Related Fields
1134 Administrators in Medicine and Health
1135 Financial Management Occupations
1136 Personnel and Industrial Relations Management Occupations
1137 Sales and Advertising Management Occupations
1141 Purchasing Management Occupations
1142 Services Management Occupations
1143 Production Management Occupations
1145 Management Occupations, Construction Operations
1147 Management Occupations, Transport and Communications
1149 Other Managers and Administrators, n.e.c.
1171 Accountants, Auditors and Other Financial Officers
1174 Personnel and Related Officers
1179 Occupations Related to Management and Administration, n.e.c.
2331 Social Workers
2341 Judges and Magistrates
2343 Lawyers and Notaries
2351 Librarians and Archivists
2391 Educational and Vocational Counsellors
3352 Writers and Editors
3355 Translators and Interpreters
3359 Occupations in Writing, n.e.c.
5173 Salesmen and Traders, Securities

### Group 2: Scientific Professionals

2111 Chemists
2112 Geologists
2113 Physicists
2114 Meteorologists
2131 Agriculturists and Related Scientists
2133 Biologists and Related Scientists
2141 Architects
2142 Chemical Engineers
2143 Civil Engineers

2144 Electrical Engineers
2145 Industrial Engineers
2147 Mechanical Engineers
2151 Metallurgical Engineers
2153 Mining Engineers
2154 Petroleum Engineers
2155 Aeronautical Engineers
2157 Nuclear Engineers
2159 Architects and Engineers, n.e.c.
2181 Mathematicians, Statisticians and Actuaries
2183 Systems Analysts, Computer Programmers and Related
2189 Occupations in Mathematics, Statistics, Systems Analysis and Related Fields, n.e.c.
2311 Economists
2313 Sociologists, Anthropologists and Related Social Scientists
2315 Psychologists
2319 Occupations in Social Sciences, n.e.c.

## Group 3: Supervisors, Technicians and Sales Occupations

1115 Postmasters
1116 Inspectors and Regulatory Officers, Government and Retail Trade
1176 Inspectors and Regulatory Offices, Non-government
2117 Physical Sciences Technologists and Technicians
2119 Occupations in Physical Sciences, n.e.c.
2135 Life Sciences Technologists and Technicians
2139 Occupations in Life Sciences, n.e.c.
2160 Supervisors: Other Occupations in Architecture and Engineering
2161 Surveyors
2163 Draughtsmen
2165 Architectural and Engineering Technologists and Technicians
2169 Other Occupations in Architecture and Engineering, n.e.c.
2333 Occupations in Welfare and Community Services
2339 Occupations in Social Work and Related Fields, n.e.c.
2349 Occupations in Law and Jurisprudence, n.e.c.
2350 Supervisors: Occupations in Library, Museum, Archival Sciences
2353 Technicians in Library, Museum and Archival Sciences
2359 Occupations in Library, Museum and Archival Sciences, n.e.c.
2399 Other Occupations in Social Sciences and Related Fields, n.e.c.
3313 Product and Interior Designers
3314 Advertising and Illustrating Artists
4110 Supervisors: Stenographic and Typing Occupations
4130 Supervisors: Bookkeeping, Account-recording and Related
4140 Supervisors: Office Machine and Electronic Data Processing Equipment Operators
4150 Supervisors: Material Recording, Scheduling and Distributing Occupations
4160 Supervisors: Library, File and Correspondence Clerks and Related Occupations
4170 Supervisors: Reception, Information, Mail and Message Distribution Occupations
4190 Supervisors: Other Clerical and Relation Occupations, n.e.c.
5130 Supervisors: Sales Occupations, Commodities

5131 Technical Salesmen and Related Advisors
5170 Supervisors: Sales Occupations, Services
5171 Insurance Salesmen and Agents
5172 Real Estate Salesmen
5174 Advertising Salesmen
5177 Business Services Salesmen
5179 Sales Occupations: Services, n.e.c.
5190 Supervisors: Other Sales Occupations
5191 Buyers, Wholesale and Retail Trade

### Group 4: Clerical Occupations

4111 Secretaries and Stenographers
4113 Typists and Clerk-typists
4131 Bookkeepers and Accounting Clerks
4133 Tellers and Cashiers
4135 Insurance, Bank and Other Finance Clerks
4137 Statistical Clerks
4139 Bookkeeping, Account-recording and Related Occupations, n.e.c.
4141 Office Machine Operators
4143 Electronic Data Processing Equipment Operators
4151 Production Clerks
4153 Shipping and Receiving Clerks
4155 Stock Clerks and Related Occupations
4157 Weighers
4159 Material Recording, Scheduling and Distributing Occupations, n.e.c.
4161 Library and File Clerks
4169 Library, File and Correspondence Clerks and Related Occupations, n.e.c.
4171 Receptionists and Information Clerks
4173 Mail and Postal Clerks
4175 Telephone Operators
4177 Messengers
4179 Reception, Information, Mail and Message Distribution Occupations, n.e.c.
4191 Collectors
4192 Adjusters, Claim
4195 Personnel Clerks
4197 General Office Clerks
4199 Other Clerical and Related Occupations, n.e.c.

### Group 5: All Other Occupations

# Appendix B

## Industry Groups

1. Manufacturing (Division 5)

2. Transportation, Communication and other Utilities (Division 7)

3. Trade (Division 8)

4. Finance, Insurance and Real Estate (Division 9)

5. Community and Personal Services
   - Education & Related Services (Divsion 10, Major Group 1)
   - Health & Welfare Services (Division 10, Major Group 2)
   - Religious Organizations (Division 10, Major Group 3)
   - Amusement & Recreation Services (Division 10, Major Group 4)
   - Personal Services (Division 10, Major Group 6)
   - Accommodation & Food Services (Division 10, Major Group 7)
   - Miscellaneous Services (Division 10, Major Group 8)

6. Services to Business Management (Division 10, Major Group 5)

7. Public Administration and Defence (Division 11)

8. 'Basic' Industries
   - Agriculture (Division 1)
   - Forestry (Division 2)
   - Fishing & Trapping (Division 3)
   - Mines (including Milling), Quarries & Oil Wells (Division 4)
   - Construction Industry (Division 6)

9. Unspecified Industries

# Appendix C

## Comparison with Other Data Sources

It is interesting to briefly compare the census journey-to-work data for the Central Area with other sources of information, particularly the employment figures collected by the Metro Planning Department, the Central Area cordon data, and Central Area office floor space figures. Such comparisons are particularly useful in bringing to light the different assumptions and qualifications that have to be applied to these different data sources.

The census journey-to-work data essentially records where people live and where they work. In this sense, the census data provide a description of home-work linkage patterns. This report, and others like it, often loosely refer to this pattern as reflecting work trips. In fact, the census data does not provide information on the number of work trips made during a given day or in the peak hour. These and other such values have to be inferred or deduced from the basic origin-destination data.

However, the place-of-work data should provide a good indication of the total level of employment in a given area. For example, the total number of people who indicate the Central Area as their place of work should, broadly speaking, add up to the stated number of employment opportunities in the Central Area. Table 10 of this report indicates that between 1971-81 the number of people from the Toronto CMA, the Hamilton CMA and Oshawa CA who indicated that they worked in the Central Area increased by approximately 86,000. In other words, Central Area employment increased by 86,000 jobs. In fact, the total increase from *all* areas of work travel to the Central Area is estimated to be approximately 92,000 (see Metro Planning Department report of November, 1981, p. 6).

This 92,000 increase is, however, considerably more than the increase in Central Area employment given by Metro employment counts for the period 1970-81. The Metro employment data indicate that total employment (i.e. both full- and part-time) in the Central Area increased by approximately 63,300 from 318,400 in 1970 to 381,700 in 1981. To some extent this discrepancy between the two employment growth estimates can be attributed to the different ways in which the data are collected. For example, the census journey-to-work data provides a very full count of employment which includes:

a) people who live and work at home;
b) people with no usual place of work;
c) all part-time workers; and
d) those who work in the Central Area but may be attached to firms located elsewhere, such as salesmen or cleaners.

The Metro employment data, on the other hand, is based upon the responses of firms in the Central Area and the 1971 and 1981 figures for part-time employment are based upon estimates rather than observations. Given the way the Metro survey is conducted, it can generally be expected that it will provide a lower estimate of Central Area employment than the more complete census method which is aimed at every individual who worked within the six months prior to the census day.

There are differences in the 1971 and 1981 census sampling rates and in the treatment of responses which were not codeable or for which no place of work was given. The general result of these differences is thought to result in an understatement, by perhaps as much as 10%, for the 1971

journey-to-work figures in relation to the 1981 numbers. Unless factoring procedures are applied to correct for these differences, the magnitude of the employment and associated trip changes over the 1971-81 period will appear over-stated.

From the above discussion, it can be seen that considerable caution has to be used in comparing Metro employment estimates to those derived from the census journey-to-work data. These two employment estimates come from very different sources and are not readily comparable without the necessary adjustments and qualifications having been made. Each data set is, however, internally consistent and, provided that the principal concern is with the rate and pattern of change rather than absolute numbers, valuable insights into employment trends can be gained from both the Metro and census sources. For example, this report has used the 1971 and 1981 census data to gain useful interpretations of the changing occupations structure of the Central Area work force and its residential location pattern.

The census figure of a 92,000 employment increase in the Central Area can be converted into an estimate of the expected resultant increase in peak-hour travel and this result can then be compared to the observed cordon data for the Central Area. The following assumptions are made in this conversion of employment to peak-hour travel:

1. total employment is reduced by 20% to reflect the impact of part-time employment and weekend work on the average weekday attendance level of Central Area workers, as well as absenteeism (vacation, illness, etc.);

2. 10% of Central Area workers are estimated to live in the Central Area and, therefore, would not cross the Central Area cordon to go to work; and

3. 50% of all Central Area workers (not just those in offices) are expected to arrive at their place of work in the maximum peak-hour. The 1979 Metro Travel Survey suggests this figure may be as low as 40% but recent surveys of Central Area office buildings by City Planning staff in 1984 and 1986 indicated that office work trips have a high peak-hour factor of around 66%. The 50% figure used here is taken as an acceptable overall average for all work trips.

Accepting these assumptions, the impact of a 92,000 employment increase on average peak-hour travel volumes into the Central Area can be estimated as:

(92,000 x 0.8 x 0.9 x 0.5) = 33,120 additional inbound passenger trips.

Traffic data for the Central Area cordon indicate that over the 1971-81 period the number of peak-hour inbound passenger trips increased by approximately 26,000 from 104,000 to 130,000 such trips. This observed figure is somewhat below the 33,120 peak-hour trip increase estimated from the census employment data. This again suggests that the census figures may overstate the 1971-81 employment increase in the Central Area or that the assumptions applied above to convert employment to trips may not be an accurate reflection of reality. At this time, it is not possible to give a more definitive explanation. However, it is interesting to note that if attention is drawn from absolute to relative comparisons, the two data sources appear to yield quite compatible results, with a census estimate of a 32% increase in employment being met by a 25% increase in peak-hour inbound trips over the 1971-81 period.

A further comparison is to measure the census increase in office employment against the amount of office space that has been built in the Central Area over the 1971-81 period. Table 1 suggests that office employment increased by approximately 60,000 over the 1971-81 period in the Central Area based on census data for the Metro CMA only. Expanding this figure to the full study area total provides an estimate of approximately 65,700 additional office jobs. It can be expected that nearly all this increase would be accommodated in office development in the Central Core. Over the 1971-81 period the amount of office space in the Core increased by about 20 million square feet and the floor space per worker ratio rose from approximately 232 square feet to 269 square feet, while the vacancy rate at the beginning and end of the period stood at around 2.5%. On the basis of these figures, the 20 million square feet increase in office space in the Central Core would have been capable of accommodating an increase of roughly 55,000 office workers. This estimate of office employment growth is quite close to the 65,700 census figure, particularly when it is borne in mind that not all office employment growth may have occurred in the Central Core or in purely office-type buildings.

It should perhaps be noted that Metro's employment data shows an 82,000 increase in Central Area office employment over the 1971-81 period. However, Metro's definition of "office employment" is not based upon occupational (or even industrial) type, but rather on the basis of principal land use. Every person working in what is predominantly an office building is classified as an office worker. This classification procedure may result in an over-estimate of office employment. On the other hand, offsetting this result, could be the fact that a certain proportion of employees in other land use classes, such as industrial, are office workers who would not be classified or recorded as such.

The material in this Appendix has illustrated some of the difficulties in comparing different data sources (census, Metro's employment figures, cordon counts and floor space numbers) and establishing consistency among them. Generally, the data sets compare favourably in relative terms when measuring the directions and rates of change, but when comparing absolute figures there are discrepancies which are difficult to explain without making a number of assumptions that are themselves open to question. This suggests that considerable scope remains for improving basic monitoring techniques and developing verification procedures to cross-check different data sources.